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Edible Coating in Food Preservations

Sanasam Angousana[1]*and Simadri Rajasri[2]

Introduction:

Fruits and vegetables are essential for sustaining excellent health since they are high in fiber, vitamins, and minerals. One of the creative methods for extending the shelf life of fruit is the use of edible coatings. Fresh fruits and vegetables have a longer postharvest shelf life when coated with edible materials. Edible coating are thin layers of edible material added to improve their nutritional content, attractiveness and preservation. Compared to other postharvest treatments, the use of different coatings to improve the quality, storage viability of fruit and prolong the freshness of minimally prepared fruit. The respiration rate of fruits is positively impacted by edible coating. By reducing water loss, the external covering can also improve the postharvest life of horticultural items it enhances attractiveness and lessen the vulnerability of skin of the products. Apart from the overall positive effects on fruit quality attributes, these treatments also seem to strengthen the plant defence system, generate enzymes linked to scavenging reactive oxygen species, such as superoxide and lower polyphenol oxidase activity. Overall, the beneficial effects of edible coatings are dependent on their hygroscopic qualities, which promote the production of O_2, CO_2 and create an altered atmosphere, which reduces fruit deterioration, weight loss, shrivelling and the growth of yeast and mold. To increase the fruits storage life, postharvest treatments with suitable edible coatings, such as chitosan, *Aloe vera* gel, corn starch etc. With the various edible coverings, the ripening changes can be slowed down to prolong the fruits shelf life.

Benefits of edible coating:

1. Shelf-life extension
2. Food quality enhancement
3. Enhancement of value-added products
4. Sustainability to environment
5. Acts as a protective layer to the products

Edible coating Examples:

1. Chitosan:

Chitosan film-forming qualities have made it an effective food wrapper. Chitosan is basically a cationic polysaccharide of considerably high molecular weight. It is

Sanasam Angousana[1]*and Simadri Rajasri[2]
[1]PhD Research Scholar, Department of Pomology and Post Harvest Technology,
[2]PhD Research Scholar, Department of Agricultural Extension,
Uttar Banga Krishi Vishwavidyalaya, West Bengal, India

extracted by de-acetylation of chitin obtained from the exoskeleton of crustaceans, fungi and insects. There are several uses for chitosan in the horticultural industry. As a result, it has been used to preserve the quality of fruits and vegetables after harvest. These enhance the fresh commodity mechanical handling qualities or structural integrity and function as an effective barrier against water vapor and respiratory gasses. Coatings efficacy is dependent upon their composition. Chitosan-based coatings showed promise for extending fruits shelf life, enhancing its storability and quality by preserving its firmness and crispness and reducing fruits rot. It is well known that coatings based on chitosan improve antimicrobial qualities and prevent the growth of molds, yeast, and bacteria. It is well known that chitosan is non-toxic to humans and has a much greater biocompatibility and good biodegradability. Outstandingly effective as a semi-permeable barrier against moisture, carbon dioxide and oxygen are chitosan. This explains the lower rate of respiration and water loss. As a result, it has several applications as an edible covering.

2. *Aleo vera* gel:

Since ancient times, *Aloe vera* has been used as an herbaceous medicinal plant and has been valued for its many therapeutic benefits. *Aloe vera*, an equatorial and bicoastal plant, has been used for its healing and curative qualities. *Aloe vera* gel coating aids in preserving gas and preventing water vapor from escaping the fruits surface. In order to prevent pathogen invasion, *Aloe vera* gel coating is also utilized as an antifungal agent. It has high aloin content gives it an exceptional antibacterial quality. In terms of marketability index and visual quality, the ALV coating remained well accepted due to its greater levels of ascorbic acid, total phenolic, total antioxidant and chlorophyll. ALV gel edible coatings have been shown to enhance food appearance, retain firmness, stop moisture loss, reduce respiration and postpone oxidative browning.

3. Corn starch:

Plants provide starch as a backup carbohydrate. Its composition varies according to its botanical origin and is made up of two polysaccharides: branching amylopectin and linear amylose. Corn starch is obtained from maize and is made up of a longer chain of amylose. It is basically a polymer and when used for fruit dipping or as an edible coating material, serve as a partial barrier to oxygen. When maize starch is heat with water, it creates a gel with an excellent consistency that may be used to make a variety of meals that need more viscosity. Its employment in films is made easier by its high amylose concentration. Due to its accessibility and affordability, corn starch is a polysaccharide

that is often utilized as an edible coating or packaging material for agricultural goods. In addition to making an edible layer more transparent, maize starch white hue makes it a desirable ingredient. It has widely been used as an edible coating to enhance shelf life of fruits. Therefore, in order to prevent oversupply and to benefit farmers, it is necessary to increase the postharvest life of fruits and increase the availability of fresh product all year round.

Conclusion:

An environmentally friendly substitute for conventional is edible coatings, a potential food preservation technique. By managing microbial growth, gas exchange, and moisture loss, they improve food quality, increase shelf life, and decrease waste. They may also serve as transporters for bioactive substances, giving food items additional nutritional content and useful qualities.